SYNOPSIS OF COLLINSONIA (LABIATAE)

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The difference between two stamens and four in the Labiatae often separates genera and whole tribes. Briquet in 1897 concluded that *Collinsonia,* which had accumulated species with both numbers, should be divided. Accordingly he segregated two species having four stamens as *Micheliella,* overlooking the fact that Rafinesque exactly eighty years before had published the genus *Hypogon,* likewise differing in having four stamens. Although each author recognized two species in his segregate genus, they were not all the same ones. Briquet's *Micheliella verticillata* is indeed very distinct from the others, as indicated in the key below, and is here considered sole representative of a new subgenus. Rafinesque's *Hypogon verticillatum,* despite the confusing identity of epithets, is an entirely different species, the long misunderstood *Collinsonia serotina* Walter *(C. punctata* Elliott), which may have either two or four functional stamens, with intermediate forms having greater or lesser development of rudiments or filaments. Even without this awkward variation. *Hypogon* is too similar in all other respects to *Collinsonia* proper to justify segregation. Likewise *Micheliella,* separating *M. anisata* (which also is in reality *C. serotina)* from the species it greatly resembles and associating it with the quite dissimilar *C. verticillata,* is obviously an unnatural genus. *Collinsonia* is here recognized with its pre-1897 limits, including the peculiar *C. verticillata* as sole representative of a subgenus defined on the basis of features of inflorescence and secondarily of leaves rather than number of functional stamens.

In addition to the material at Southern Methodist University, I have had the use of collections from Florida State University, the University of Florida, the Gray Herbarium (not including those referred to *Micheliella,* which I carelessly forgot to explain were to be included in *Collinsonia* when requesting the loan), North Carolina State College, and the University of North Carolina. My thanks are due the various curators for their courtesies.

COLLINSONIA L., Sp. Pl. 1: 28, 1753, and Gen. Pl. (ed. 5) p. 16, 1754. Only original species and automatic type: C. CANADENSIS L.

Hypogon Rafinesque, Fl. Ludov. p. 148. 1817. (Also on p. 41 as *nomen provisorium.)* Lectotype species: *H. verticillatum* Raf. = COLLINSONIA SEROTINA Walt.

Diallosteira Rafinesque, Neogenyton p. 2, 1825. (Reference for this and the next not seen; taken from Merrill, Index Rafinesquianus p. 206 and p. 209, 1949.) Type (only) species: *D. punctata* (Ell.) Raf. ex Jackson = COLLINSONIA SEROTINA Walt.

SIDA 1 (2): 76—83. 1962.

Pleuradenia Rafinesque, Neogenyton p. 2. 1825. Two species: *P. praecox* (Walt.) Raf. ex Jackson (*"precox"*), identity uncertain (either *Collinsonia serotina* Walt. or *C. tuberosa* Michx.); *P. scabra* ("Pers.") Raf. ex Jackson = COLLINSONIA SEROTINA Walt.

Micheliella Briquet in Engler & Prantl, Nat. Pflanzenfam. Teil IV. Abt. 3a: 325. 1897. Lectotype species: *M. verticillata* (Baldwin) Briquet = COLLINSONIA VERTICILLATA Baldwin. This is here recognized as constituting *Collinsonia* subg. **Micheliella** (Briquet) Shinners, stat. nov., differing from subg. *Collinsonia* in having flowers subverticillate or alternate instead of opposite, lacking floral bracts, and having pedicels with enlarged flattened bases. (See also first couplet in key below.) The number of functional stamens is variable in subg. *Collinsonia* as here defined and is not a usable basis for separating the subgenera.

KEY TO THE SPECIES

1a. Flowers close-set in groups of 3—6 in lower and middle part of the simple inflorescence; floral bracts absent, the pedicels with widened, flat bases; leaves 4 (rarely 2), closely crowded (subopposite or subverticillate) in upper part of stem, all rather long-petioled; flowering spring—early summer ..... 1. *C. verticillata*

1b. Flowers 2 at all nodes of the simple or branched inflorescence; floral bracts present, minute to large, the pedicels not enlarged at base; leaves 6 or more, opposite, the uppermost greatly reduced, short-petioled or sessile; flowering late summer—fall.

2a. Blades of larger stem leaves 8—25 cm. long, with 11—42 teeth on each margin, glabrous or variously pubescent beneath; plant with large, woody, irregular, more or less elongate, rhizome-like crown 4—15 cm. long; stem 2—7 mm. thick near base

3a. Flowering calyx 3.2—7.6 mm. long, the lower (narrower) teeth subacute to acuminate, the midvein barely or not exserted; stamens variously 2 with 2 rudiments, or 2 with 2 short to full-length empty filaments, or 4 and all anther-bearing; leaf blades pubescent or pilosulous over the surface beneath; Coastal Plain, North Carolina to southeastern Louisiana, rare inland ..... 2. *C. serotina*

3b. Flowering calyx 2.3—4.3 mm. long, the lower teeth with elongate, subulate tips partly formed by extension of midvein; stamens 2 with 2 rudiments, or rarely anther-bearing stamens none; leaf blades glabrous or variously hispidulous or pubescent beneath; interior and northern (except for one outlying locality in northern Florida) ..... 3. *C. canadensis*

2b. Blades of larger stem leaves 4.0—10.5 cm. long, with 5—15 teeth on each margin, glabrous or hispidulous on the main veins beneath; plant with usually small, rounded, lobed, or elongate tuber-

like crown (up to 5 cm. across or 6 cm. long); stem 1—4 mm. thick near base.....4. *C. tuberosa*

1. C. VERTICILLATA Baldwin ex Elliott, Sketch Bot. S.C. & Ga. 1: 36—37. 1817. "Var. *a.* grows near Milledgeville, between the Oconee and Oakmulgee rivers (Baldwin Co.), Georgia." According to Weatherby (1942) the type of this species, collected by Dr. Boykin, is preserved at Charleston. — *Micheliella verticillata* (Baldwin) Briquet in Engler & Prantt, Nat. Pflanzenfam. Teil IV. Abt. 3a: 325. 1897. — *Hypogon verticillatum* (Baldwin) House, N.Y. State Mus. Bull. 233-234: 67. 1922. (Not *Hypogon verticillatum* Rafinesque, which is a synonym of *C. serotina;* see under no. 2, below.)

Flowering April—June. GEORGIA. Floyd, Richmond, Walker. NORTH CAROLINA. Polk. TENNESSEE. McMinn.

2. C. SEROTINA Walter, Fl. Carol. p. 65. 1788. According to Fernald and Schubert (1948), there is a specimen in the Walter Herbarium which is the same as *C. punctata* Elliott. I do not consider this or any other specimen at the British Museum a holotype. The material preserved there was sent to Fraser by Walter. It may include isotypes or topotypes, or merely supplementary material, but it is not the primary Walter collection. Because of lack of labels and mixups among those preserved, we have no means of knowing precisely what the nature of the specimens is. In this case the type region plus the scanty description are in agreement with the evidence from the specimen, and I am willing to accept the latter as added justification for adopting Walter's name. — *C. scabriuscula* Aiton, Hort. Kew. (ed. 1) 1: 47. 1789. "East Florida. Mr. *John Bartram.*" The description and type locality are sufficient to establish the identity of this species. Why the name is not even mentioned in Small's floras is a mystery; it was accepted by Chapman and by Gray in the *Synoptical Flora,* though misunderstood by them. — *C. anisata* Sims, Bot. Mag. 30: t. 1213. 1809. Described from cultivated material. "Native of S.C." *C. serotina* Walter is cited as doubtful synonym. The plate, which must be taken as the type, is quite distinctive, and represents an extreme form with very short, wide calyx teeth which at first I thought separable from *C. serotina.* — *C. ovalis* Pursh, Fl. Am. Sept. 1: 21. 1813 ("1814"). "In South Carolina, Fraser." Referred to *C. canadensis* by Bentham, but the phrase "calycis dentibus brevissimis" excludes that species and quite definitely applies to this one. — *C. scabra* Pursh, 1. c. p. 20. Illegitimate substitute name for *C. scabriuscula* Aiton and *C. praecox* Walter, both placed in synonymy without query. — *Hypogon anisatum* (Sims) Rafinesque, Fl. Ludov. p. 148. 1817. — *Collinsonia punctata* Elliott, Sketch Bot. S.C. & Ga. 1: 36. 1817. "In rich soils. Frequent." There is a phototype at the Gray Herbarium on which Mr. Weatherby has noted "Leaves almost tomentose is rather strong." — *C. verticillaris* Rafinesque, Fl. Ludov. p. 41. 1817. — *Hypogon verticillatum* Rafinesque, l.c. p. 142. This may have been merely a slip of the pen, but as published is an illegitimate substitute name for *Collinsonia*

verticillaris. Merrill *(Index Rafinesquianus* p. 206) mistakenly equates this with *Micheliella verticillata* (Baldwin) Briquet. — *Collinsonia canadensis* var. ? *puberula* Bentham in DC., Prodr. 12: 253. 1848. "In Louisiana (Drumm.!) in Alabama (Rugel!)."—*C. canadensis* var. *punctata* (Elliott) Gray, Syn. Fl. N.A. 2 pt. 1: 351. 1878. (By Fernald this name was extended to apply to pubescent-leaved forms of *C. canadensis.)* — *Diallosteira punctata* (Elliott) Rafinesque ex Jackson, Index Kewensis 1: 741. 1893. — *Pleuradenia scabra* ("Pers.") Rafinesque ex Jackson, l.c. 2: 562. 1894. (This properly goes back to *Collinsonia scabriuscula* Aiton; Persoon merely misspelled the name.) — *Hypogon verticillare* (Rafinesque) Nieuwland, Amer. Midl. Nat. 3: 178. 1914.

This is the only *Collinsonia* that I have seen in the field, and a merry indoor chase it has led me. My lone collection (no. 28,956) was made 9.8 miles northwest of Loxley in Baldwin County, Alabama, 26 October 1960. The plants were past flowering, but in a few withered corollas it was possible to find four well-developed filaments. After much ransacking of synonymy, I concluded that it was the long forgotten *C. verticillaris* Rafinesque. The real answer to the puzzle came with the loan from Florida State University. Godfrey & Kral 54288, from Wacissa Springs, Jefferson County, Florida, 20 October 1955, showed flowers in the same inflorescence with two and with four stamens. Once stamen-number was rejected as a taxonomic character, it became possible to delimit *Collonsonia serotina* more satisfactorily. It is a variable species, especially as to width of calyx teeth and density of leaf pubescence. Some North Carolina specimens proved difficult to determine, closely approaching *C. canadensis.* There may be introgressive hybridization in that state, but on the whole I think the variation in the two species is a matter of homologous mutations. The ranges of the two are almost entirely separate. The hairs in *C. serotina* are rather long and slender; in *C. canadensis* they are coarse and hispidulous, or short, or absent. The inflorescence in both species may have glandular-capitate hairs or sessile glands, so that the key character used by Small is quite worthless. One specimen of *C. serotina* from Decatur County, Georgia (just west of Jim Woodruff Dam, *Richard S. Mitchell 1319,* FSU) is notable in having a simple inflorescence and only 3 pairs of stem leaves, so that in aspect it suggests *C. verticillata.* The same specimen shows exceptionally broad though not short calyx teeth.

Flowering September—October. Except for a few puzzling collections from interior North Carolina, and one unmistakable one from De Kalb County, Georgia, this is a Coastal Plain species, from the Carolinas through northern Florida to southeastern Louisiana. ALABAMA. Baldwin, Lee. FLORIDA. Alachua, Clay, Columbia, Escambia, Gadsden, Holmes, Jackson, Jefferson, Leon. GEORGIA. Decatur, De Kalb, Meriwether. LOUISIANA. Washington. MISSISSIPPI. Forrest. NORTH CAROLINA. Richmond, Rockingham, Stanly. SOUTH CAROLINA. Beaufort, Lexington.

It is this species which William Bartram found in or near Baldwin County, Alabama, and described in his travels. Harper, following Mohr, identified it as *C. anisata.* Mohr states incorrectly (1903, p. 15) that Bartram named it *C. anisata.* Bartram did not give it a specific name, speaking of it merely as a *Collinsonia.*

3. C. CANADENSIS L., Sp. Pl., 1: 28. 1753. "*Habitat in* Virginiae, Canadae *sylvis.*" There is no description, but reference is made to description and figure in the Hortus Cliffortianus, and to Colden. A Hortus Cliffortianus specimen in the British Museum was designated lectotype by Epling, Journ. Bot. 67: 6, 1929 (phototype in Gray Herbarium examined). — *C. canadensis* var. *cordata* and var. *ovata* Pursh, Fl. Am. Sept. 1: 20. 1813 ("1814"). — *C. angustifolia* Rafinesque, Med. Fl. 1: 114. 1828. "Kentucky, Ohio, &c." — The name *C. canadensis* var. *punctata* is used by Fernald for pubescent-leaved forms of this species, but on the basis of type is a synonym of *C. serotina.*

As already indicated under the preceding, this species varies greatly in pubescence. If varieties are recognized, there really should be more than two. On the basis of the material I have seen, I prefer to regard these as minor variations not worthy of nomenclatural recognition. I have seen specimens from as far north and west as Vermont, Ontario, Michigan, and Indiana; it is reported in literature from Quebec (Gleason), Wisconsin (Fernald), Illinois (Jones & Fuller), Missouri (Palmer & Steyermark), and Arkansas (several manuals). Authenticated records for the South are summarized below; that for Arkansas, which I have not been able to verify, is discussed at the end. Except for an outlying station in northern Florida, it barely enters the Coastal Plain.

Flowering August—October. ALABAMA. *(S. B. Buckley,* without locality.) D.C. ("Near Great Falls, Maryland.") FLORIDA. Jackson. GEORGIA. Cass, Clay, Forsyth, Richmond. KENTUCKY. Bell, Estill, Lyon. MARYLAND. Frederick. NORTH CAROLINA. Alexander, Ashe, Avery, Buncombe, Burke, Caldwell, Cherokee, Clay, Forsyth, Gaston, Graham, Greenville, Harnett, Haywood, Henderson, Jackson, Lexington, Macon, Madison, McDowell, Mitchell, Randolph, Rowan, Stokes, Swain, Transylvania, Union, Watauga, Yadkin, Yancey. (Also Glade Gap, county not determined.) SOUTH CAROLINA. Abbeville, Edgefield, Greenville, Lancaster, McCormick, Pickens. TENNESSEE. Carroll, Grundy, Knox, Roane. VIRGINIA. Appomattox, Bedford, Botetourt, Clarke, Craig, Fairfax, Fauquier, Giles, Montgomery, Rockbridge, Smythe, Spotsylvania, Surry. WEST VIRGINIA. Cabell, Greenbrier, Hampshire, Pocahontas, Summers, Tucker.

In the Synoptical Flora, Gray reports *C. scabriuscula* as extending west to "E. Ark." He used that name, rather strangely, for *C. tuberosa,* which does extend northwest to Memphis, Tennessee, just across the Mississippi River from Arkansas (or did extend; it was collected there in 1853). Unfortunately there is no voucher for the Arkansas record at the Gray Herbarium. In later manuals only *C. canadensis* is credited

to that state. I have seen no specimens to verify this either, although the occurrence of the species in several counties in the Missouri Ozarks makes it seem likely.

4. C. TUBEROSA Michaux, Fl. Bor.-Am. 1: 17. 1803. "In umbrosis humidisque sylvarum Carolinae." Phototype, GH. — As noted just above, Gray misapplied the name *C. scabriuscula* Aiton (properly a synonym of *C. serotina)* to this species. *C. praecox* Walter is possibly but by no means certainly the same (see remarks under doubtful or excluded names at end).

This is really much more distinct than may appear from the key. The seemingly inconclusive feature of leaf pubescence was inserted to help separate this from *C. serotina,* whose geographic range it shares in large part.

Flowering September. ALABAMA. Blount, Tuscaloosa. GEORGIA. Whitfield. LOUISIANA. East Feliciana, Orleans. MISSISSIPPI. Harrison. NORTH CAROLINA. Allamance, Chatham, Guilford, Henderson, Richmond. (Also Blowing Rock, county not determined.) SOUTH CAROLINA. Berkeley, Calhoun, Chester, Dorchester, Orangeburg, Sumter. TENNESSEE. Shelby.

DOUBTFUL OR EXCLUDED NAMES

The following list does not include the very numerous misapplications of names, of which the two most noteworthy have been mentioned in the text (*C. canadensis* var. *punctata* for forms of *C. canadensis* instead of *C. serotina; C. scabriuscula* for *C. tuberosa* instead of *C. serotina).* The precise disposition of most of these names could probably be determined. Since in all cases but one there are older valid names for the species to which they might possibly belong, their identity is of academic interest only. I prefer to devote my inadequate time to matters that really require it.

In addition to the following, there are five *nomina nuda* listed in Merrill's Index Rafinesquianus *(C. bicolor, C. cordata, C. grandiflora, C. heterophyla, C. longiflora)* which need not be considered. From the type localities, the first four are to be referred to *C. canadensis.*

C. ANISATA var. MAJOR Bentham in DC., Prodr. 12: 254. 1848. "In Georgia (Nutt.!) et Florida (herb. Hook.!)." The Georgia specimen may have been *C. serotina,* the Florida one almost certainly was.

C. CUNEATA Wenderoth, Schrift. Ges. Bef. Gesammt. Naturw. Marb. 2: 242. 1831. Cited by Bentham as doubtful synonyn of *C. canadensis.* I have not seen the original description. All recognized species of the genus have older names.

C. DECUSSATA Moench, Meth. p. 379. 1794. Said by Bentham and Gray to be a synonym of *C. canadensis.*

C. HETEROPHYLLA Graham. Merrill (Index Raf. p. 206) states that *C. bicolor* Rafinesque ex M'Murtrie is probably this. I can find no other mention of such a binomial.

C. PRAECOX Walter, Fl. Carol. p. 65. 1788. This may be *C. tuberosa,* but it also may be a form of *C. serotina.* No specimen is preserved, and the brief description is inconclusive. Because only *C. tuberosa* and *C. serotina* occur in Walter's home area, it is extremely tempting to equate *C. praecox* with *C. tuberosa.* The comment that it has flowers both terminal and lateral would certainly apply to normal forms of *C. tuberosa,* but *C. serotina* may rarely have lateral flowering branches also. As Gray noted, *C. tuberosa* is not early-flowering. In the interest of nomenclatural stability, I believe that *C. praecox* Walter should not displace *C. tuberosa.*

C. PURPUREA Oemler ex Elliott, Sketch Bot. S.C. & Ga. 1: 35. 1817. Appears only as a synonym of *C. scabra* (i.e., *C. serotina).*

C. SCABRA "Persoon," Syn. Pl. 1: 29, 1805, and C. SCABRA "Elliott," Sketch Bot. S.C. & Ga. 1: 35, 1817. Both authors credit the name to Aiton, so that these are simple errors for *C. scabriuscula* and have no nomenclatural standing. But *C. scabra* Pursh was apparently a deliberate substitute name (see under *C. serotina).*

C. URTICIFOLIA Salisbury, Prodr. p. 75. 1796. Listed in Index Kewensis as a synonym of *C. canadensis.*

C. VERTICILLATA var. PURPURASCENS Elliott, Sketch Bot. S.C. & Ga. 1: 37. 1817. "Near Crooked river bridge, Camden county, Georgia." The species occurs in the interior. The unusual specimen of *C. serotina* from Decatur County, Georgia, noted in the text under that species, makes me wonder if Elliott did not have something like it (with simple inflorescence and a few leaves, stimulating *C. verticillata).* Camden County is on the coast in extreme southeastern Georgia, where *C. serotina* rather than *C. verticillata* is to be expected. According to Weatherby, no specimen is preserved in the Elliott Herbarium in Charleston.

REFERENCES

BARTRAM, WILLIAM (ed. Francis Harper). 1958. The Travels (Naturalist's edition). *Collinsonia,* pp. 260—261 (orig. 411-412). 477.

BENTHAM, G. 1848. *Collinsonia.* In DC., Prodr. 12: 252—254.

BRIQUET, J. 1897. Labiatae-Stachyoideae-Perillinae; *Micheliella, Collinsonia.* In Engler & Prantl, Nat. Pflanzenfam. Teil IV. Abt. 3a: 325—326.

FERNALD, MERRITT LYNDON. 1950. *Collinsonia, Micheliella.* Gray's Man. Bot. (8th ed.) pp. 1250—1251.

FERNALD, M. L., AND BERNICE G. SCHUBERT. 1948. Studies of American types in British herbaria. Some species of Thomas Walter. *Collinsonia serotina.* Rhodora 50: 223.

GLEASON, HENRY A. 1952. *Collinsonia.* New Britton & Brown Ill. Flora 3: 189.

GRAY, ASA. 1878. *Collinsonia.* Syn. Fl. N.A. 2 pt. 1: 351.

JONES, GEORGE NEVILLE, AND GEORGE DAMON FULLER. 1955. *Collinsonia canadensis.* Vasc. Pl. Illinois p. 403.

MERRILL, ELMER D. 1949. *Collinsonia, Diallosteira, Pleuradenia.* Index Raf. pp. 206, 209.

MOHR, CHARLES. 1901. *Collinsonia.* Plant Life of Alabama (Contrib. U.S. Nat. Herb. 6) pp. 15, 696—697.

PALMER, ERNEST J., AND JULIAN A. STEYERMARK. 1935. An annotated catalogue of the flowering plants of Missouri. *Collinsonia canadensis.* Ann. Mo. Bot. Garden 22: 636.

SMALL, JOHN KUNKEL. 1903 (2nd ed. 1913). *Micheliella, Collinsonia.* Fl. S.E. U.S. pp. 1050—1051.

———————. 1933. *Micheliella, Collinsonia.* Man. S.E. Fl. pp. 1178—1179.

WEATHERBY, C. A. 1942. A list of type specimens in Elliott's herbarium. *Collinsonia.* Rhodora 44: 254 (Contrib. Gray Herb. 141.)